WETLAND MITIGATION SITE MONITORING REPORT
FAP 322 (U.S. 51), Jackson County, IL - 2003

Introduction

This report details the second year of monitoring of the wetland mitigation sites created to compensate for approximately 0.8 ha (2 ac) of wetlands impacted as a result of FAP 322 (U.S. 51 relocation and improvement), in Jackson County, Illinois. Three areas of wet meadow creation were proposed for the project. Two of these areas (Sites 4 and 5) were actually created. Together these two sites cover approximately 0.52 ha (1.27 ac). Native grasses and cover crops were planted at these sites along with bald cypress (*Taxodium distichum*), swamp white oak (*Quercus bicolor*), and pin oak (*Quercus palustris*) seedlings. A third wetland meadow creation area (marked Site 9) was found to be unaltered. Besides the wet meadow creation areas, a backwater high flow channel/floodplain forest enhancement was created (Site 2a). This area covers approximately 0.10 ha (0.25 ac). Native grasses and cover crops were planted in this area with the expectation that native hydrophytic tree species from surrounding areas will colonize the site. A second floodplain forest enhancement was not implemented (Site 7). Streambank restoration was proposed and carried out on an area covering approximately 0.17 ha (0.42 ac) (Site 1). At this site river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*), white pine (*Pinus strobus*), swamp white oak (*Quercus bicolor*), pin oak (*Quercus palustris*), and bald cypress (*Taxodium distichum*) seedlings were planted. Two adjacent areas of floodplain forest preservation (Sites 8 and 10) and two areas of upland forest buffer (Sites 3 and 6) are also listed on the schematic diagram although these areas had no apparent topographic, hydrologic, or vegetative alterations made to them either in 2002 or 2003.

This complex of sites is located along the east side of U.S. Route 51, adjacent to a channelized section of Piles Fork Creek (a tributary of Orchard Creek), alongside the campus of Southern Illinois University south of Carbondale, IL. The legal location is W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W. The project area lies within the United States Geological Survey Mississippi River hydrologic unit 07140106 (Big Muddy River). Details concerning the timing of site construction and tree planting were not provided. It seems likely, however, that the Illinois Department of Transportation (IDOT) completed construction of the site around spring 2002 and that trees were planted on the site around the same time or shortly thereafter. Additional trees were planted on the site between August of 2002 and August of 2003. On-site monitoring was conducted in 2003.

This report discusses the goals, objectives, and performance criteria for the mitigation project, the methods used for monitoring the site, monitoring results, and a discussion and recommendations based on the results. Methods and results are discussed by performance criteria for each goal. Wetland determination forms have been completed for Sites 4 and 5 and for both the altered and unaltered sections of Site 2 [the backwater channel creation (Site 2a) and the mesic floodplain forest (Site 2b)] and are included in appendix A. Photos of Sites 2a, 2b, 4, and 5 taken on 11 September 2003 are included in appendix B.

Goals, Objectives, and Performance Standards

Goals, objectives, and performance standards follow those specified in the tasking order (Scott Marlow, IDOT Wetlands Unit, 2002) developed for this site and the wetland compensation plan (Charles Perino, IDOT Wetlands Unit, 1996). Performance criteria are based on those specified in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and in *Guidelines for Developing Mitigation Proposals* (USACE 1993). Each goal

should be attained by the end of the 5-year monitoring period. Goals, objectives, and performance criteria are listed below.

Project goal 1: Wet meadow communities (sites 4 and 5) and high flow backwater channel/wetland floodplain forest enhancement areas (sites 2a and 2b) will meet the criteria of jurisdictional wetlands.

Objective: The created wetlands should cover approximately 0.8 ha (2.0 ac).

Performance criteria:
a. Predominance of hydrophytic vegetation: More than 50% of the dominant plant species must be hydrophytic in the created wetlands.
b. Presence of wetland hydrology: The created wetlands must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated within 30 cm (12 in) of the surface for at least 12.5% of the growing season.
c. Occurrence of hydric soils: Hydric soil characteristics should be present, or conditions favorable for hydric soil formation should persist in the created wetlands.

Project goal 2: Created wet meadows (Sites 4 and 5) and high flow backwater channel/wetland floodplain forest enhancement areas (sites 2a and 2b) will meet minimum standards of floristic composition.

Objective: All mitigation areas should be composed of vegetation characteristic of the stated community type.

Performance criteria:
a. Full vegetative cover of the sites: Mitigation sites must have at least 75% vegetative cover.
b. Predominance of non-weedy native vegetation: None of the three most dominant species in any stratum at any of the sites may be invasive native or exotic species such as *Typha* spp. (cattails), *Phalaris arundinacea* (reed canary grass), or *Lonicera* spp. (honeysuckles).
c. Predominance of herbaceous vegetation in wet meadow creations: After five years none of the dominant species may be woody in the wet meadow areas.

Project goal 3: Floodplain forest will be established along the Piles Fork Creek streambank restoration (Site 1).

Objective: Floodplain forest should cover approximately 0.1 ha (0.2 ac). Native non-invasive herbaceous understory vegetation should colonize the site naturally.

Performance criteria:
a. Establishment of tree seedlings: 50% of planted trees must survive after five years.
b. Dominance of woody vegetation: Woody vegetation should predominate.

Methods

Project goal 1
a. Predominance of hydrophytic vegetation
The method for determining dominant vegetation at a wetland site is described in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and further explained in the *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation 1989). It is based on aerial coverage estimates for individual plant species. Each of the dominant plant species is then assigned its wetland indicator status rating (Reed 1988). Any plant rated facultative or wetter, *i.e.*, FAC,

FAC+, FACW, and OBL, is considered a hydrophyte. A predominance of vegetation in the wetland plant community exists if more than 50% of the dominant species present are hydrophytic.

b. Presence of wetland hydrology
Illinois State Geological Survey (ISGS) personnel installed 16 ground water monitoring wells, one rain gauge, one global data logger, one RDS data logger, and one staff gauge at the site in 2002 and 2003. Locations for these sites can be found in the ISGS document *Annual Water-level Report for Active IDOT Sites* (Figure 1; Fucciolo et al. 2003; Fucciolo et al. 2002). Water-level data was collected monthly throughout 2002 and 2003 from May 2002. The ISGS has reported on the hydrology of the site in Fucciolo et al. (2003; reproduced as Figure 1). Secondary hydrology indicators were also noted during fieldwork on 18 July 2002 and on 11 September 2003.

c. Occurrence of hydric soils
At each creation/restoration site the soil was sampled in order to monitor hydric soil development. Soil profile morphology including horizon color, texture, and structure was described. Additionally, the presence, type, size, and abundance of redoximorphic features was noted.

Hydric soils may develop slowly, and characteristics may not be apparent during the first several years after project construction. In the absence of hydric soils indicators at the end of the five year monitoring period, hydrologic data could be used as corroborative evidence that conditions favorable for hydric soil formation persist at the site.

Project goal 2
a. 75% vegetative cover of the sites
Percent cover for each site was determined. After five years each of the sites should have at least 75% cover.

b. Predominance of non-weedy native vegetation
Species lists were compiled for each site. Dominant species and all weedy or non-native species were noted. After five years no weedy or non-native species should be dominant in any of the sites.

c. Predominance of herbaceous vegetation in wet meadow creations
Any dominant woody plant species for the wet meadow creations have been noted. After five years no woody species should be dominant in the wet meadow creation sites.

Project goal 3
a. Establishment of tree seedlings
In order to establish floodplain forest, tree seedlings were planted at Site 1. All planted trees were counted and percent survival was calculated for each species. In the floodplain forest enhancement area (Site 2a) propagules from the surrounding forest are expected to regenerate the high flow backwater channel area naturally.

b. Dominance of woody vegetation
After five years the site should be dominated by hydrophytic woody species.

Results

Project goal 1

a. Predominance of hydrophytic vegetation

Dominant plant species for the wet meadow creation areas (Sites 4 and 5) and the high flow backwater channel/floodplain forest enhancement areas (Site 2a and 2b) are shown in Table 1 (below). Since 100% of the dominant species at Sites 2a, 4, and 5 and 80% of the dominant species at site 2b are rated OBL, FACW+, FAC+, or FAC, hydrophytic vegetation is present at all wetland creation/ enhancement sites.

Table 1. Dominant plant species by stratum and wetland indicator status

Dominant Plant Species	Stratum	Indicator Status
Site 1.		
c. *Betula nigra*	shrub (planted)	FACW
d. *Fraxinus pennsylvanica*	shrub (planted)	FACW
d. *Leersia oryzoides*	herb	OBL
e. *Lolium perenne* *	herb (planted)	FACU
Site 2a.		
d. *Agrostis alba* *	herb	FACW
e. *Echinochloa muricata* *	herb	OBL
f. *Leersia oryzoides*	herb	OBL
Site 2b.		
1. *Fraxinus pennsylvanica*	tree	FACW
2. *Platanus occidentalis*	tree	FACW
3. *Asimina triloba*	sapling	FAC
4. *Chasmanthium latifolium*	herb	FACW
5. *Lonicera japonica* *	herb	FACU
Site 4.		
a. *Agrostis alba* *	herb	FACW
b. *Eupatorium serotinum* *	herb	FAC+
c. *Leersia oryzoides*	herb (planted)	OBL
Site 5.		
1. *Agrostis alba* *	herb	FACW
2. *Eupatorium serotinum* *	herb	FAC+
3. *Leersia oryzoides*	herb (planted)	OBL
4. *Phyla lanceolata* *	herb	OBL

* Non-native or weedy native species

b. Presence of wetland hydrology
The project area is adjacent to Piles Fork Creek. This creek floods parts of the project area in at least some years during the growing season. A small tributary to Piles Fork Creek also flows through Site 4. The Illinois State Geological Survey (ISGS) found that wetland hydrology was present over parts of Sites 2a, 4, and 5 for sufficient duration during the growing season in 2003 to satisfy the wetland hydrology criterion (Figure 1; Fucciolo et al. 2003). The ISGS estimated the total area of wetland hydrology for 2003 in Sites 2a, 4, and 5 to be 0.4 ha (0.9 ac).

Secondary indicators of wetland hydrology, particularly matted vegetation and sediment deposits, were also found during field investigation of Sites 2a, 4, and 5. Neither we nor the ISGS found any indication of wetland hydrology at Site 1 (streambank/ floodplain forest restoration), Site 2b (floodplain forest enhancement), or any of the other sites in the project area which were not altered by restoration activities (Sites 3, 6, 7, 8, 9, and 10).

c. Occurrence of hydric soils
Soils examined at both the wet meadow creation sites (Sites 4 and 5) and the backwater high flow channel (Site 2a) were found to be highly disturbed. Much cutting and filling has been done within the top twenty inches and the sites lack a true undisturbed A horizon and part of the B horizon. Even though the soils are disturbed, hydric soil indicators are present. Following is a soil description of a typical pedon at the created wetland sites (Table 2).

Table 2. Description of the soils in the created wetlands

Depth	Matrix Color	Concre-tions	Iron Masses	Pore linings	Iron Deplet.	Tex-ture	Structure
0-13+ in	10YR 4/1, 5/1, 4/3	none	mmp 7.5YR 4/6 cmp 10YR 4/6	none	none	SiL	Gr

Project goal 2
a. Full vegetative cover of the sites
At the time of the survey all sites had nearly full (100%) vegetative cover.

b. Predominance of non-weedy native vegetation
Dominant plant species at each site are listed by strata in Table 1. The quality of vegetation at all of the sites is moderate to good. Floristic quality index (FQI) values range from 17.0 (Site 5) to 21.0 (Site 2b) with mean C values (mCv) ranging from 2.4 (Site 4) to 3.2 (Site 2b). However, a number of non-native plants as well as several weedy native species are present at each site. In particular two or three of the dominants in each of the wetland creation sites (Sites 2a, 4 and 5) are weedy native species. These weedy species may need to be controlled in order to lessen their abundance. However, as long as native plant species are not crowded out of the creation sites by exotic or aggressive native species the quality of the vegetation should stay the same or improve over the next few years. Species lists for each of the creation/enhancement sites (Sites 2a, 2b, 4 and 5) are given in appendix A.

c. Predominance of herbaceous vegetation in wet meadow creations
Currently no woody species are dominant in either of the wet meadow creations sites (Sites 4 and 5). Seedling size individuals of several tree species [particularly *Populus deltoides* (cottonwood) and *Salix* sp. (willow)] are present in both of these sites. Both areas are surrounded by forest which will continue to be a source of propagules. Woody vegetation may, therefore, need to be controlled to maintain these sites as wet meadows.

Along with aggressive woody species which may invade the wet meadow restorations (Sites 4 and 5), a number of seedlings of *Quercus bicolor* (swamp white oak), *Quercus palustris* (pin

oak), and *Taxodium distichum* (bald cypress) have been planted within or on the edge of the wet meadow sites (Table 3). As these trees mature they will tend to change the character of these restoration sites from wet meadow to wet shrubland and finally to floodplain forest. This circumstance may need to be addressed in coming years.

Table 3. Tree seedling establishment in the wet meadow restorations (Sites 4 and 5).

Species	Common Name	Present	Planted	Percent Surviving
Quercus bicolor	swamp white oak	11	11	100
Quercus palustris	pin oak	1	1	100
Taxodium distichum	bald cypress	51	51	100
Total		**63**	**63**	

Project goal 3

a. Establishment of tree seedlings

Table 4 shows the planted and surviving trees in Site 1. A total of 202 live planted trees were counted.

Table 4. Tree seedling establishment in the floodplain forest restoration (Site 1).

Species	Common Name	Present	Planted	Percent Surviving
Betula nigra	river birch	75	75	100
Fraxinus pennsylvanica	green ash	29	29	100
Pinus strobus	white pine	51	51	100
Quercus bicolor	swamp white oak	25	25	100
Quercus palustris	pin oak	13	13	100
Taxodium distichum	bald cypress	9	9	100
Total		**202**	**202**	

No tree seedlings have been planted at the backwater high flow channel (Site 2). However the site is bordered by floodplain forest dominated by *Fraxinus pennsylvanica* (green ash) and *Platanus occidentalis* (sycamore). Volunteer individuals of several tree species including *Betula nigra* (river birch), *Fraxinus pennsylvanica* (green ash), *Platanus occidentalis* (sycamore), *Populus deltoides* (cottonwood), *Salix amygdaloides* (peach-leaf willow), and *Salix nigra* (black willow) have established as seedlings at the site as a result of propagules from nearby floodplain forest.

b. Dominance of woody vegetation

At Site 1 after one year the surviving planted tree seedlings are healthy. Woody dominance at this site will continue to expand as these trees get larger and natural regeneration progresses. In the area around the created high flow backwater channel (Site 2) no trees have been planted so there is no woody component at this time. However, the volunteer tree species currently present will likely increase in size and numbers over time.

Discussion

After two monitoring seasons, the vegetation in the wetland creation areas (Sites 2a, 4, and 5) is of moderate to good quality and is dominated by hydrophytic species. The vegetation at these sites should stay the same or show improvement in quality and diversity in coming years as long as exotic or aggressive native species do not crowd out desirable native species. However, at the present time Sites 2a, 4, and 5 each have two or three dominant weedy native species

which may need to be controlled to achieve the goal of no exotic or weedy native species as dominants. Also, woody vegetation may begin to encroach (and eventually) dominate the wet meadow creation areas (Sites 4 and 5) if not controlled particularly since tree species have been planted within and on the edge of both wet meadow creation sites. The dominance of woody species in the floodplain forest/ high flow channel restoration (Site 2a) is desirable and will probably occur naturally since floodplain forest is nearby.

Soils at all restoration sites have been seriously disturbed. Even so, they do contain hydric soil indicators, and therefore can be characterized as hydric. The primary concern at this time for wetland establishment at these sites is continuing wetland hydrology. Hydrology is being monitored by the ISGS. In the 2003 growing season wetland hydrology was present on a total of 0.4 ha (0.9 ac) among Sites 2a, 4, and 5. 0.9 acres is slightly less than half the total acreage of the restoration areas (Figure 1; Fucciolo et al. 2003). The ISGS may suggest remedial work in the area to improve hydrology.

It should also be noted that the created backwater channel (Site 2a) has not been constructed in a manner that will bring water to the adjacent mesic floodplain forest (Site 2b). This non-wetland forest cannot be expected to develop hydric soils or wetland hydrology with the current hydrologic and topographic conditions and has shown no indications of wetland hydrology in 2003 (Figure 1; Fucciolo et al. 2003).

Large tree seedlings have been planted in the streambank restoration area (Site 1) and in the wet meadow restorations (Sites 4 and 5). 202 live planted trees were counted in Site 1, 12 in Site 4, and 51 in Site 5. Woody species invasion and maturation of planted trees species in the wet meadow creations (Sites 4 and 5) will change the character of these areas in coming years to wet shrubland and finally to floodplain forest. This issue may need to be addressed if credit is specifically needed to mitigate for emergent wetland impacts. Also, in the streambank restoration (Site 1) 51 Pinus strobus (white pine) have been planted. It should be noted that white pine is not native to southern Illinois and is not normally associated with floodplain forests.

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Appendix A
Wetland Determination Forms

ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 1 of 4)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: High flow channel creation/floodplain forest enhancement
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This high flow channel creation/floodplain forest enhancement is located 70 m (230 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Agrostis alba* *	FACW	herb
2. *Echinochloa muricata* *	OBL	herb
3. *Leersia oryzoides*	OBL	herb

* Weedy native species

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%
Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Undetermined (soil excavated)

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 7.5YR 4/6 and 10YR4/6
Redox Depletions?	Yes: X	No:	Color: 10YR 5/1

Matrix color: 10YR 4/1, 5/1, 5/2, and 4/3
Other indicators: This soil was found in a depressional area.

Hydric soils? Yes: X No:
Rationale: This soil has been altered by excavation of the surface soil layers in order to create a wetland. The soil colors present at this site are indicative of a hydric soil, but it is impossible to determine for certain whether these colors are indicative of past or current conditions at this site. However, we believe at this time that the colors reflect the current depressional landscape position. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 - Depleted matrix.

ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 2 of 4)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: High flow channel creation/floodplain forest enhancement
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This high flow channel creation/floodplain forest enhancement is located 70 m (230 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: > 0.33 m (13 in)
Overview of hydrological flow through the system: This site is hydrologically influenced by overflow from Piles Fork Creek, sheet flow from adjacent higher ground, and by precipitation. Water leaves the site via evapotranspiration and flow into nearby Piles Fork Creek.
Size of Watershed: Approximately 10 km^2 (3.9 mi^2)
Other field evidence observed: Matted vegetation and low landscape position

Wetland hydrology: Yes: X No:
Rationale: This site has been excavated to create a high flow (overflow) oxbow. There is evidence of significant saturation in this area during the growing season.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: X No:
Rationale: Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present at the site; therefore, the site is a wetland. The NWI did not code this site as a wetland.

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ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 3 of 4)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: High flow channel creation/floodplain forest enhancement
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This high flow channel creation/floodplain forest enhancement is located 70 m (230 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Acer negundo	box elder	herb	FACW-	1
Agrostis alba	red top	herb	FACW	0
Betula nigra	river birch	herb	FACW	4
Bidens cernua	beggar's ticks	herb	OBL	2
Bidens frondosa	beggar's ticks	herb	FACW	1
Boehmeria cylindrica	false nettle	herb	OBL	3
Carex frankii	sedge	herb	OBL	4
Cicuta maculata	water hemlock	herb	OBL	4
Cirsium vulgare	bull thistle	herb	FACU-	*
Cyperus strigosus	flat sedge	herb	FACW	0
Desmodium paniculatum	tick trefoil	herb	FACU	2
Echinochloa muricata	barnyard grass	herb	OBL	0
Elymus virginicus	Virginia wild rye	herb	FACW	4
Eupatorium coelestinum	mistflower	herb	FAC+	3
Eupatorium perfoliatum	boneset	herb	FACW+	4
Eupatorium serotinum	late flowering thoroughwort	herb	FAC+	1
Fraxinus pennsylvanica	green ash	herb	FACW	2
Hibiscus laevis	halberd-leaf rose mallow	herb	OBL	4
Impatiens capensis	jewelweed	herb	FACW	2
Iva annua	sumpweed	herb	FAC	0
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lobelia siphilitica	blue lobelia	herb	FACW+	4
Lycopus americanus	water horehouind	herb	OBL	3
Lycopus virginicus	bugleweed	herb	OBL	5
Mimulus alatus	monkey flower	herb	OBL	6
Nasturtium officinale	water cress	herb	OBL	*
Panicum clandestinum	deer tongue grass	herb	FACW	4
Phalaris arundinacea	reed canary grass	herb	FACW+	*
Phleum pratense	Timothy	herb	FACU	*
Phyla lanceolata	fog fruit	herb	OBL	1

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION

Site 2a (page 4 of 4)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: High flow channel creation/floodplain forest enhancement
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This high flow channel creation/floodplain forest enhancement is located 70 m (230 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Platanus occidentalis	sycamore	herb	FACW	3
Polygonum punctatum	dotted smartweed	herb	OBL	3
Polygonum virginianum	Virginia knotweed	herb	FAC	3
Populus deltoides	cottonwood	herb	FAC+	2
Rudbeckia laciniata	cutleaf coneflower	herb	FACW+	3
Rumex crispus	curly dock	herb	FAC	*
Salix amygdaloides	peach leaf willow	herb	FACW	4
Salix nigra	black willow	herb	OBL	3
Solanum carolinense	horse nettle	herb	FACU-	0
Solidago canadensis	Canada goldenrod	herb	FACU	1
Sorghum halepense	Johnson grass	herb	FACU	*
Teucrium canadense	germander	herb	FACW-	3
Typha angustifolia	narrow leaf cattail	herb	OBL	*
Verbena hastata	blue vervain	herb	FACW+	3
Verbena urticifolia	white vervain	herb	FAC+	3
Verbesina alternifolia	wingstem	herb	FACW	4
Xanthium strumarium	cocklebur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 102/40 = 2.6$
$FQI = \sum C/(\sqrt{N}) = 102/(\sqrt{40}) = 16.1$

ROUTINE ONSITE WETLAND DETERMINATION

Site 2b (page 1 of 4)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Mesic floodplain forest (floodplain forest enhancement)
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This mesic floodplain forest (floodplain forest enhancement) is located 60 m (200 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Fraxinus pennsylvanica*	FACW	tree
2. *Platanus occidentalis*	FACW	tree
3. *Asimina triloba*	FAC	sapling
4. *Chasmanthium latifolium*	FACW	herb
5. *Lonicera japonica* *	FACU	herb

* Exotic species

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 80%
Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: NRCS mapped as Bonnie silt loam;
revised to Belknap silt loam (Fluvaquentic Endoaquept)

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 7.5YR 4/6 and 10YR4/6
Redox Depletions?	Yes: X	No:	Color: 10YR 5/1

Matrix color: 10YR 4/3
Other indicators: None

Hydric soils? Yes: No: X
Rationale: The Natural Resources Conservation Service identifies Belknap as a Fluvaquentic Endoaquept that is somewhat poorly drained. This soil possesses redox concentrations and depletions within a high chroma matrix, which indicates saturated or reduced conditions for only brief duration during the growing season. Therefore, the soil at this site does not meet the hydric soil criterion. This soil meets none of the NRCS hydric soil indicators.

ROUTINE ONSITE WETLAND DETERMINATION

Site 2b (page 2 of 4)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Mesic floodplain forest (floodplain forest enhancement)
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This mesic floodplain forest (floodplain forest enhancement) is located 60 m (200 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: > 0.48 m (19 in)
Overview of hydrological flow through the system: This site is hydrologically influenced by precipitation and, possibly, by overflow of Piles Fork Creek in large flood events. Water leaves the site via evapotranspiration and flow into nearby Piles Fork Creek and the recently created backwater channel.
Size of Watershed: Approximately 10 km^2 (3.9 mi^2)
Other field evidence observed: None.

Wetland hydrology: Yes: No: X
Rationale: This site is considerably higher than the adjacent constructed high flow channel (Site 2a) and Piles Fork Creek and is sloping down toward these areas.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: No: X
Rationale: Although dominant hydrophytic vegetation is present at the site, hydric soils and wetland hydrology are lacking; therefore, the site is not a wetland. The NWI did not code this site as a wetland.

Determined by: Dan Busemeyer, Allen Plocher, and Rick Larimore
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ROUTINE ONSITE WETLAND DETERMINATION

Site 2b (page 3 of 4)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Mesic floodplain forest (floodplain forest enhancement)
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This mesic floodplain forest (floodplain forest enhancement) is located 60 m (200 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Acer negundo	box elder	tree/shrub	FACW-	1
Amphicarpa bracteata	hog peanut	herb	FAC	4
Asimina triloba	paw paw	tree/sapling	FAC	4
Aster pilosus	hairy aster	herb	FACU+	0
Betula nigra	river birch	tree	FACW	4
Boehmeria cylindrica	false nettle	herb	OBL	3
Campsis radicans	trumpet creeper	herb/woody vine	FAC	2
Carex annectans	sedge	herb	FACW	3
Carex artitecta	sedge	herb	UPL	5
Carex grayi	Gray's sedge	herb	FACW+	6
Carya cordiformis	bitternut hickory	shrub	FAC	4
Celtis occidentalis	hackberry	shrub	FAC-	3
Cercis canadensis	redbud	sapling	FACU	3
Chasmanthium latifolium	sea oats	herb	FACW	4
Cirsium vulgare	bull thistle	herb	UPL	*
Desmanthus illinoensis	bundle flower	herb	FAC-	4
Desmodium paniculatum	tick trefoil	herb	FACU	2
Diospyros virginiana	persimmon	sapling	FAC	2
Eleagnus umbellata	autumn olive	shrub	UPL	*
Elymus virginicus	Virginia wild rye	herb	FACW-	4
Eupatorium rugosum	white snakeroot	herb	FACU	2
Fraxinus pennsylvanica	green ash	tree/sap/shrub/herb	FACW	2
Gleditsia triacanthos	honey locust	shrub/herb	FAC	2
Helianthus tuberosus	Jerusulem artichoke	herb	FAC	3
Hypericum prolificum	shrub St. John's wort	herb	FACU	6
Lobelia siphilitica	blue lobelia	herb	FACW+	4
Lonicera japonica	Japanese honeysuckle	herb/woody vine	FACU	*
Lonicera maackii	Amur honeysuckle	shrub	UPL	*
Menispermum canadense	moonseed	herb	FAC	4

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION
Site 2b (page 4 of 4)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Mesic floodplain forest (floodplain forest enhancement)
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This mesic floodplain forest (floodplain forest enhancement) is located 60 m (200 ft) east of U.S. 51, 320 m (1050 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Ostrya virginiana	hop hornbeam	shrub	FACU-	4
Parthenocissus quinquefolia	Virginia creeper	herb/woody vine	FAC-	2
Phlox divaricata	blue phlox	herb	FACU	5
Platanus occidentalis	sycamore	tree/sapling	FACW	3
Polygonum virginianum	Virginia knotweed	herb	FAC	3
Populus deltoides	cottonwood	tree	FAC+	2
Quercus imbricaria	shingle oak	herb	FAC-	2
Quercus rubra	northern red oak	tree	FACU	5
Rosa multiflora	multiflora rose	shrub	FACU	*
Rudbeckia laciniata	cutleaf coneflower	herb	FACW+	3
Sanicula gregaria	common snakeroot	herb	FAC+	2
Silphium perfoliatum	cup plant	herb	FACW-	4
Smilax hispida	bristly greenbriar	woody vine	FAC	3
Solidago canadensis	Canada goldenrod	herb	FACU	1
Solidago gigantea	late goldenrod	herb	FACW	3
Toxicodendron radicans	poison ivy	herb/woody vine	FAC+	1
Ulmus americana	American elm	tree/sapling	FACW-	5
Verbesina alternifolia	wingstem	herb	FACW	4
Viburnum prunifolium	black haw	shrub	FACU	4
Vitis riparia	riverbank grape	herb/woody vine	FACW-	2

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 139/44 = 3.2$
$FQI = \sum C/\sqrt{N} = 139/\sqrt{44} = 21.0$

ROUTINE ONSITE WETLAND DETERMINATION

Site 4 (page 1 of 5)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 400 m (1300 ft) north of the intersection of U.S. 51 and Reservoir Rd.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Agrostis alba* *	FACW	herb
2. *Eupatorium serotinum* *	FAC+	herb
3. *Leersia oryzoides*	OBL	herb

* Weedy native species

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%
Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Undetermined (soil excavated)

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 7.5YR 4/6 and 10YR4/6
Redox Depletions?	Yes: X	No:	Color: 10YR 5/1

Matrix color: 10YR 4/1, 5/1, 5/2, and 4/3
Other indicators: This soil was found in a depressional area.

Hydric soils? Yes: X No:
Rationale: This soil has been altered by excavation of the surface soil layers in order to create a wetland. The soil colors present at this site are indicative of a hydric soil, but it is impossible to determine for certain whether these colors are indicative of past or current conditions at this site. However, we believe at this time that the colors reflect the current depressional landscape position. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 - Depleted matrix.

ROUTINE ONSITE WETLAND DETERMINATION
Site 4 (page 2 of 5)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 400 m (1300 ft) north of the intersection of U.S. 51 and Reservoir Rd.

HYDROLOGY
Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: > 0.33 m (13 in)
Overview of hydrological flow through the system: This site is hydrologically influenced by overflow from Piles Fork Creek, inflow from a small upland tributary of Piles Fork Creek, sheet flow from adjacent higher ground, and by precipitation. Water leaves the site via evapotranspiration and flow into nearby Piles Fork Creek.
Size of Watershed: Approximately 10 km^2 (3.9 mi^2)
Other field evidence observed: Matted vegetation and sediment deposits.

Wetland hydrology: Yes: X No:
Rationale: The site has evidence of significant saturation during the growing season.

DETERMINATION AND RATIONALE:
Is the site a wetland? Yes: X No:
Rationale: Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present at the site; therefore, it is a wetland. The NWI codes this site partially as PFO1A (temporarily flooded, broad-leaved deciduous, forested, palustrine wetland).

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ROUTINE ONSITE WETLAND DETERMINATION
Site 4 (page 3 of 5)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 400 m (1300 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Acalypha rhomboidea	three-seeded Mercury	herb	FACU	0
Acer negundo	box elder	sapling	FACW-	1
Agrostis alba	red top	herb	FACW	0
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Ammannia coccinea	long-leaved ammannia	herb	OBL	5
Amphicarpa bracteata	hog peanut	herb	FAC	4
Aster sp.	aster	herb	-	-
Betula nigra	river birch	tree	FACW	4
Bidens aristosa	swamp marigold	herb	FACW	1
Bidens cernua	nodding beggar-ticks	herb	OBL	2
Boehmeria cylindrica	false nettle	herb	OBL	3
Carex sp.	sedge	herb	-	-
Carex vulpinoidea	fox sedge	herb	OBL	3
Conyza canadensis	horseweed	herb	FAC-	0
Cryptotaenia canadensis	honewort	herb	FAC	1
Cyperus erythrorhizos	red-rooted sedge	herb	OBL	1
Cyperus strigosus	long scaled nut sedge	herb	FACW	0
Desmodium illinoense	Illinois tick trefoil	herb	UPL	5
Dichanthelium clandestinum	broad-leaved panic grass	herb	FACW	4
Echinochloa muricata	barnyard grass	herb	OBL	0
Eleocharis obtusa	blunt spike rush	herb	OBL	2
Erigeron strigosus	daisy fleabane	herb	FAC-	2
Eupatorium coelestinum	blue boneset	herb	FAC+	3
Eupatorium perfoliatum	common boneset	herb	FACW+	4
Eupatorium rugosum	white snakeroot	herb	FACU	2
Eupatorium serotinum	late boneset	herb	FAC+	1
Fraxinus pennsylvanica	green ash	tree	FACW	2
Hibiscus lasiocarpus	hairy rose mallow	herb	FACW+	5
Hypericum mutilum	dwarf St. John's-wort	herb	FACW	5
Hypericum punctatum	spotted St. Johns-wort	herb	FAC+	3
Impatiens capensis	jewelweed	herb	FACW	2
Iva annua	marsh elder	herb	FAC	0

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION
Site 4 (page 4 of 5)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 400 m (1300 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Juncus torreyi	Torrey's rush	herb	FACW	3
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lespedeza cuneata	sericea lespedeza	herb	NI	*
Liriodendron tulipifera	tulip poplar	tree	FACU+	5
Lobelia siphilitica	blue cardinal-flower	herb	FACW+	4
Lonicera japonica	Japanese honeysuckle	herb	FACU	*
Lycopus americanus	common water horehound	herb	OBL	3
Mimulus alatus	winged monkey flower	herb	OBL	6
Oenothera biennis	evening primrose	herb	FACU	1
Panicum dichotomiflorum	fall panicum	herb	FACW-	0
Paspalum laeve	smooth lens grass	herb	UPL	2
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Perilla frutescens	beefsteak plant	herb	FAC	*
Phleum pratense	Timothy	herb	FACU	*
Phyla lanceolata	fog-fruit	herb	OBL	1
Pilea pumila	Canada clearweed	herb	FACW	3
Platanus occidentalis	sycamore	tree	FACW	3
Polygonum cespitosum	creeping smartweed	herb	UPL	*
Polygonum punctatum	dotted smartweed	herb	OBL	3
Populus deltoides	eastern cottonwood	tree	FAC+	2
Rotala ramosior	tooth-cup	herb	OBL	4
Rudbeckia hirta	black-eyed Susan	herb	FACU	2
Salix exigua	sandbar willow	shrub	OBL	1
Salix nigra	black willow	tree	OBL	3
Samolus valerandii	brookweed	herb	OBL	5
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Senecio glabellus	butterweed	herb	OBL	0
Setaria faberi	giant foxtail	herb	FACU+	*
Setaria glauca	pigeon grass	herb	FAC	*
Silphium perfoliatum	cup plant	herb	FACW-	4
Toxicodendron radicans	poison ivy	shrub	FAC+	1
Typha angustifolia	narrow-leaved cattail	herb	OBL	*

Species list continued on next page.

ROUTINE ONSITE WETLAND DETERMINATION
Site 4 (page 5 of 5)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 400 m (1300 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Verbascum thapsus	woolly mullein	herb	UPL	*
Verbena hastata	blue vervain	herb	FACW+	3
Verbena urticifolia	white vervain	herb	FAC+	3
Verbesina alternifolia	wing stem	herb	FACW	4
Xanthium strumarium	cockle bur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \sum C/N = 140/58 = 2.4$
$FQI = \sum C/(\sqrt{N}) = 140/(\sqrt{58}) = 18.4$

PLANTED TREES

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Quercus bicolor	swamp white oak	shrub	FACW+	7
Quercus palustris	pin oak	shrub	FACW	4
Taxodium distichum	bald cypress	shrub	OBL	7

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species
**These calculations include native plants from the complete species list above together with the planted trees.

$mCv = \sum C/N = 158/61 = 2.6$**
$FQI = \sum C/(\sqrt{N}) = 158(\sqrt{61}) = 20.2$**

ROUTINE ONSITE WETLAND DETERMINATION
Site 5 (page 1 of 5)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 480 m (1570 ft) north of the intersection of U.S. 51 and Reservoir Rd.

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soils, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Indicator Status	Stratum
1. *Agrostis alba* *	FACW	herb
2. *Eupatorium serotinum* *	FAC+	herb
3. *Leersia oryzoides*	OBL	herb
4. *Phyla lanceolata* *	OBL	herb

* Weedy native species

Percentage of dominant species that are OBL, FACW, FAC+, or FAC: 100%
Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of the dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Undetermined (soil excavated)

On county hydric soils list?	Yes:	No: X	
Is the soil a histosol?	Yes:	No: X	
Histic epipedon present?	Yes:	No: X	
Redox Concentrations?	Yes: X	No:	Color: 7.5YR 4/6 and 10YR4/6
Redox Depletions?	Yes: X	No:	Color: 10YR 5/1

Matrix color: 10YR 4/1, 5/1, 5/2, and 4/3
Other indicators: This soil was found in a depressional area.

Hydric soils? Yes: X No:
Rationale: This soil has been altered by excavation of the surface soil layers in order to create a wetland. The soil colors present at this site are indicative of a hydric soil, but it is impossible to determine for certain whether these colors are indicative of past or current conditions at this site. However, we believe at this time that the colors reflect the current depressional landscape position. Therefore, the soil at this site meets the hydric soil criterion. This soil meets NRCS hydric soil indicator F3 - Depleted matrix.

ROUTINE ONSITE WETLAND DETERMINATION
Site 5 (page 2 of 5)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 480 m (1570 ft) north of the intersection of U.S. 51 and Reservoir Rd.

HYDROLOGY
Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: > 0.33 m (13 in)
Overview of hydrological flow through the system: This site is hydrologically influenced by overflow from Piles Fork Creek, sheet flow from adjacent higher ground, and by precipitation. Water leaves the site via evapotranspiration and flow into nearby Piles Fork Creek.
Size of Watershed: Approximately 10 km^2 (3.9 mi^2)
Other field evidence observed: Depressional landscape position and matted vegetation.

Wetland hydrology: Yes: X No:
Rationale: The site has evidence of significant saturation during the growing season.

DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: X No:
Rationale: Dominant hydrophytic vegetation, hydric soils, and wetland hydrology are present at the site; therefore, the site is a wetland. The NWI codes this site partially as PFO1A (temporarily flooded, broad-leaved deciduous, forested, palustrine wetland).

Determined by: Dan Busemeyer, Allen Plocher, and Rick Larimore
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ROUTINE ONSITE WETLAND DETERMINATION
Site 5 (page 3 of 5)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 480 m (1570 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Acalypha rhomboidea	three-seeded Mercury	herb	FACU	0
Acer saccharinum	silver maple	tree	FACW	1
Agrostis alba	red top	herb	FACW	0
Ambrosia artemisiifolia	common ragweed	herb	FACU	0
Aster lateriflorus	side-flowered aster	herb	FACW-	2
Aster vimineus	frost flower	herb	FACW-	3
Betula nigra	river birch	tree	FACW	4
Bidens aristosa	swamp marigold	herb	FACW	1
Bidens cernua	nodding beggar-ticks	herb	OBL	2
Bidens frondosa	common beggar-ticks	herb	FACW	1
Boehmeria cylindrica	false nettle	herb	OBL	3
Chamaesyce maculata	nodding spurge	herb	FACU-	0
Conyza canadensis	horseweed	herb	FAC-	0
Cyperus strigosus	long scaled nut sedge	herb	FACW	0
Desmodium illinoense	Illinois tick trefoil	herb	UPL	5
Desmodium paniculatum	panicled tick trefoil	herb	FACU	2
Echinochloa muricata	barnyard grass	herb	OBL	0
Equisetum hyemale affine	tall scouring rush	herb	FACW-	2
Eupatorium coelestinum	blue boneset	herb	FAC+	3
Hibiscus lasiocarpus	hairy rose mallow	herb	FACW+	5
Hypericum mutilum	dwarf St. John's-wort	herb	FACW	5
Hypericum punctatum	spotted St. Johns-wort	herb	FAC+	3
Iva annua	marsh elder	herb	FAC	0
Juncus effusus solutus	common rush	herb	OBL	4
Juncus tenuis	path rush	herb	FAC	0
Juncus torreyi	Torrey's rush	herb	FACW	3
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lobelia siphilitica	blue cardinal-flower	herb	FACW+	4
Ludwigia alternifolia	seedbox	herb	OBL	5
Ludwigia palustris americana	marsh purslane	herb	OBL	4
Lycopus americanus	common water horehound	herb	OBL	3
Lycopus virginicus	bugle weed	herb	OBL	5
Medicago sativa	alfalfa	herb	UPL	*

Species list continued on next page.

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 480 m (1570 ft) north of the intersection of U.S. 51 and Reservoir Rd.

SPECIES LIST (continued)

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Mimulus alatus	winged monkey flower	herb	OBL	6
Phyla lanceolata	fog-fruit	herb	OBL	1
Platanus occidentalis	sycamore	tree	FACW	3
Polygonum persicaria	spotted lady's thumb	herb	FACW	*
Polygonum punctatum	dotted smartweed	herb	OBL	3
Populus deltoides	eastern cottonwood	tree	FAC+	2
Rumex crispus	curly dock	herb	FAC+	*
Salix nigra	black willow	tree	OBL	3
Samolus valerandii	brookweed	herb	OBL	5
Scirpus atrovirens	dark green bulrush	herb	OBL	4
Scutellaria lateriflora	mad-dog skullcap	herb	OBL	4
Setaria glauca	pigeon grass	herb	FAC	*
Silphium perfoliatum	cup plant	herb	FACW-	4
Solidago canadensis	Canada goldenrod	herb	FACU	1
Solidago gigantea	late goldenrod	herb	FACW	3
Typha angustifolia	narrow-leaved cattail	herb	OBL	*
Verbena hastata	blue vervain	herb	FACW+	3
Xanthium strumarium	cockle bur	herb	FAC	0

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species

$mCv = \Sigma C/N = 115/46 = 2.5$
$FQI = \Sigma C/(\sqrt{N}) = 115/(\sqrt{46}) = 17.0$

**Planted species on next page.

ROUTINE ONSITE WETLAND DETERMINATION

Site 5 (page 5 of 5)

Field Investigators: Busemeyer, Wiesbrook, Plocher, and Larimore
Date: 11 September 2003 **Project Name:** FAP 322 (US 51)
State: Illinois **County:** Jackson **Applicant:** IDOT District 9
Site Name: Wet meadow creation
Legal Description: W 1/2, SE 1/4, Section 28, T. 9 S., R. 1 W.
Location: This wet meadow creation is located 60 m (200 ft) east of U.S. 51, 480 m (1570 ft) north of the intersection of U.S. 51 and Reservoir Rd.

PLANTED TREES

Scientific Name	Common Name	Stratum	Wetland indicator status	C†
Taxodium distichum	bald cypress	shrub	OBL	7

† Coefficient of Conservatism (Taft et al. 1997)
* Non-native species
**These calculations include native plants from the complete species list above together with the planted trees.

$mCv = \sum C/N = 122/47 = 2.6$**
$FQI = \sum C/(\sqrt{N}) = 122(\sqrt{47}) = 17.8$**

Appendix B
Photographs of Sites 2a, 2b, 4, and 5

Photo 1. Site 2a, facing south.

Photo 2. Site 2b, facing west.

Photo 3. Site 4, facing south.

Photo 4. Site 5, facing north.

Figure 1. Carbondale Wetland Compensation Site (FAP 322 - U.S. 51). Estimated Areal Extent of 2003 Wetland Hydrology. Map based on IDOT mitigation design plan rectified to USGS digital orthophotograph. Carbondale NW quarter quadrangle. (Fucciolo et al. 2003)

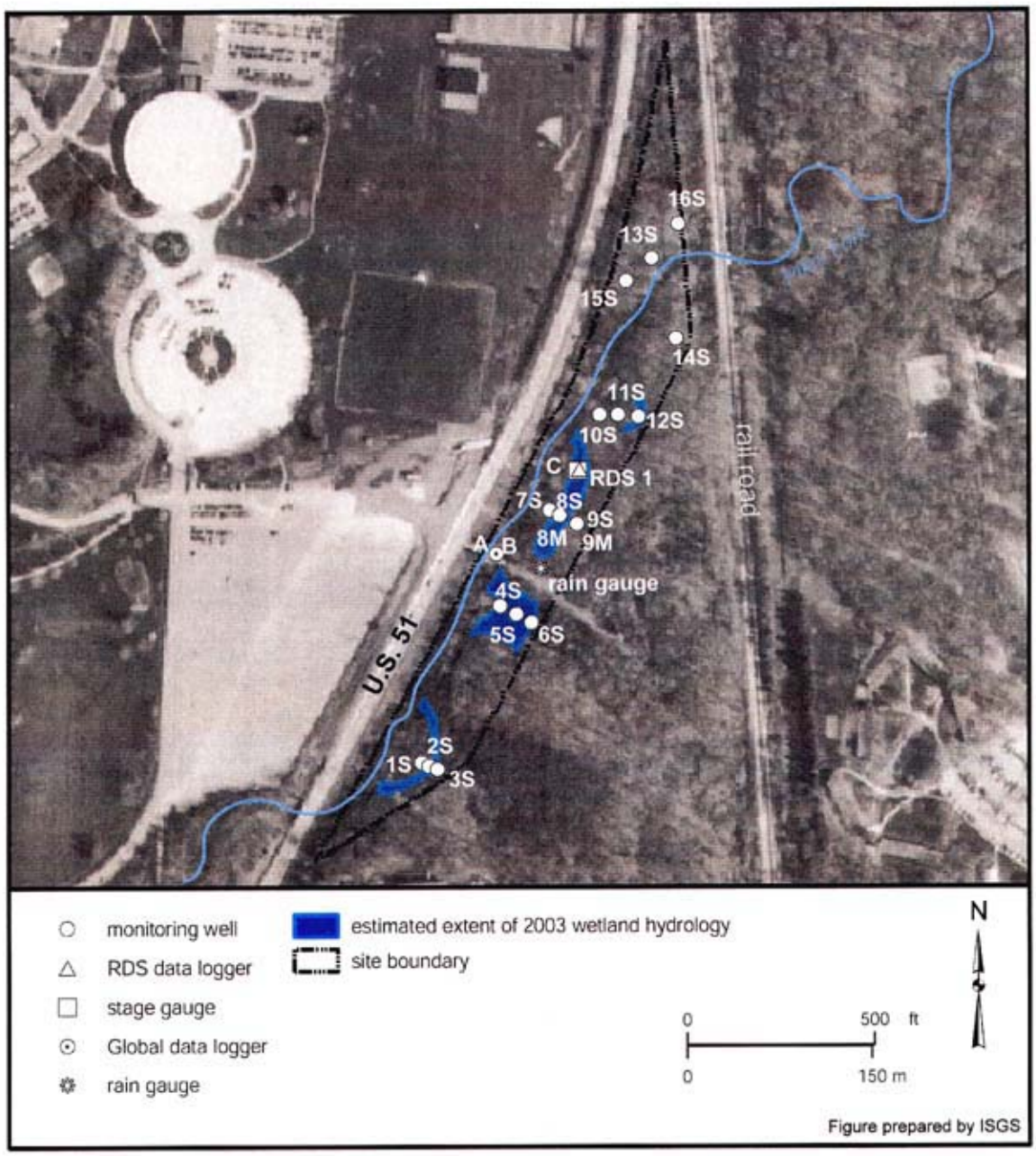
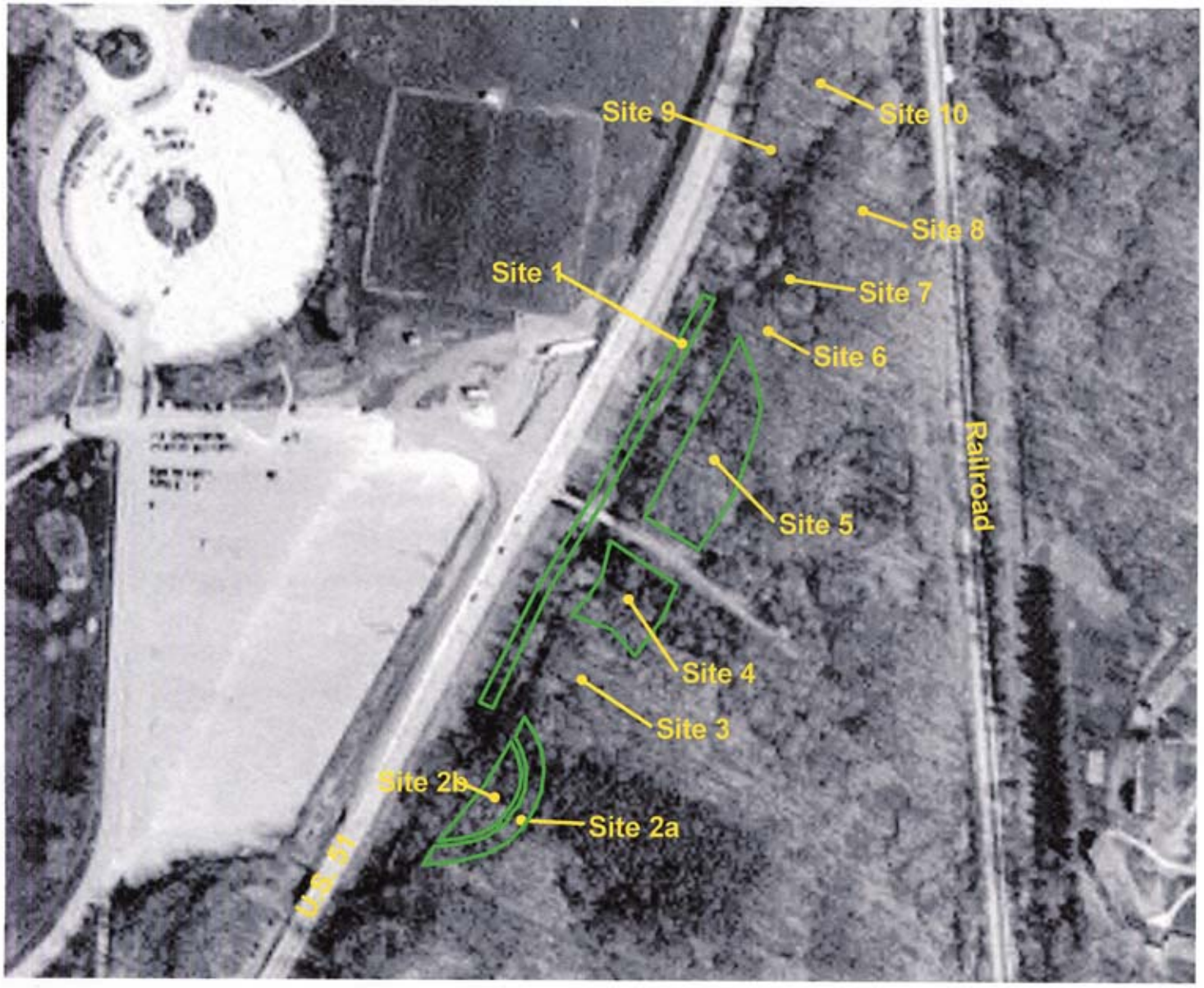


Figure 2. FAP 322 (U.S. 51) Mitigation Project Area



Floodplain forest reconstruction
Site 1 - 0.17 ha (0.42 ac)

Floodplain forest enhancement/ high flow channel
Site 2a - 0.10 ha (0.25 ac)
Site 2b - 0.09 ha (0.23 ac)

Wet meadow creation
Site 4 - 0.18 ha (0.43 ac)
Site 5 - 0.34 ha (0.84 ac)

Total area of creation/ enhancement areas:
0.88 ha (2.17 ac)

200 0 200 400 Meters

500 0 500 1000 Feet